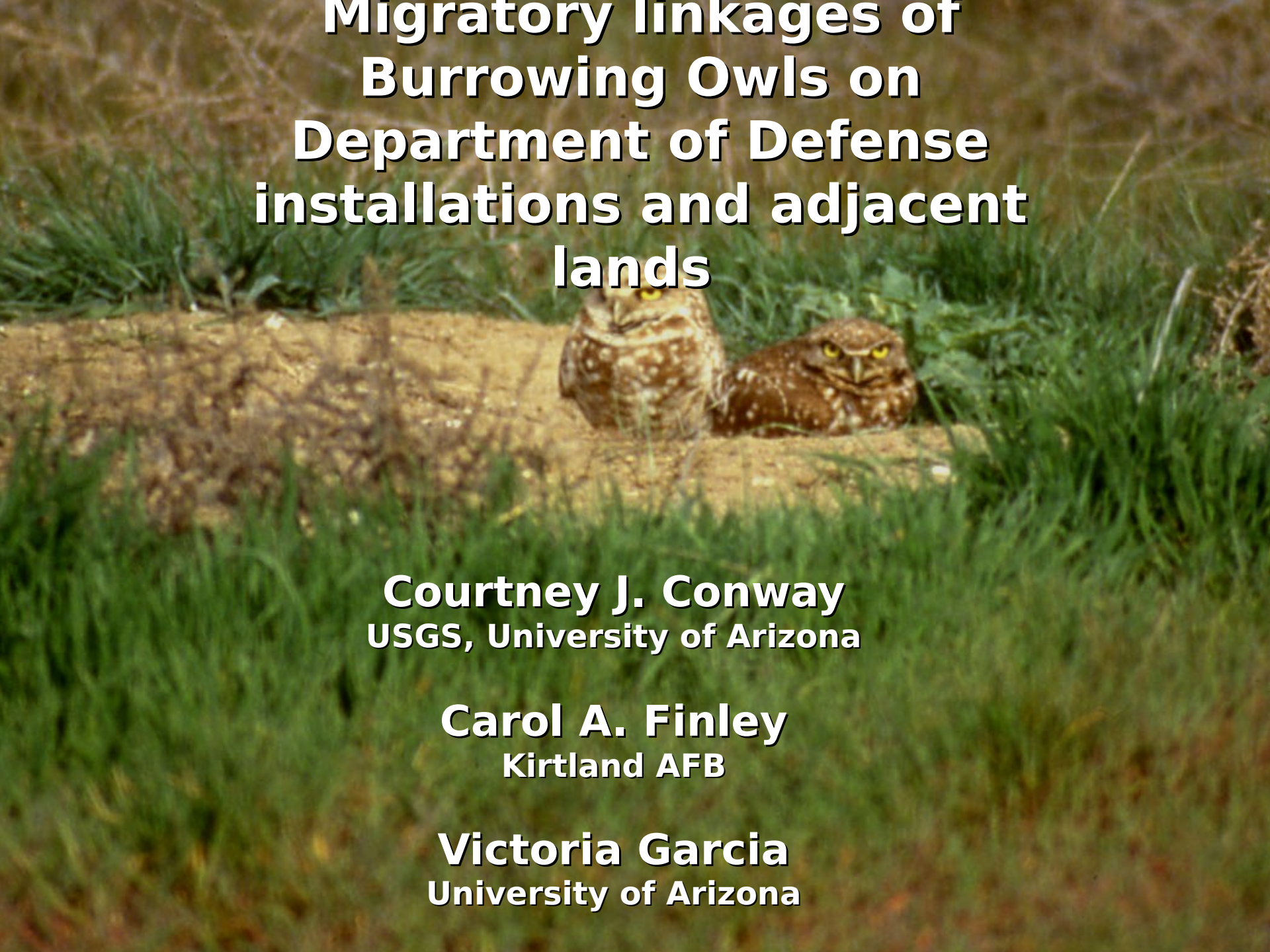
Migratory linkages of Burrowing Owls on Department of Defense installations and adjacent lands



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Burrowing Owls (*Athene cunicularia*)

- once a common breeder in grasslands and deserts
- now have declined or been extirpated from range periphery

- federal Species of National Conservation Concern
- endangered in 2 states and Canada
- but are increasing in other parts of range

Are Burrowing Owls becoming less migratory?

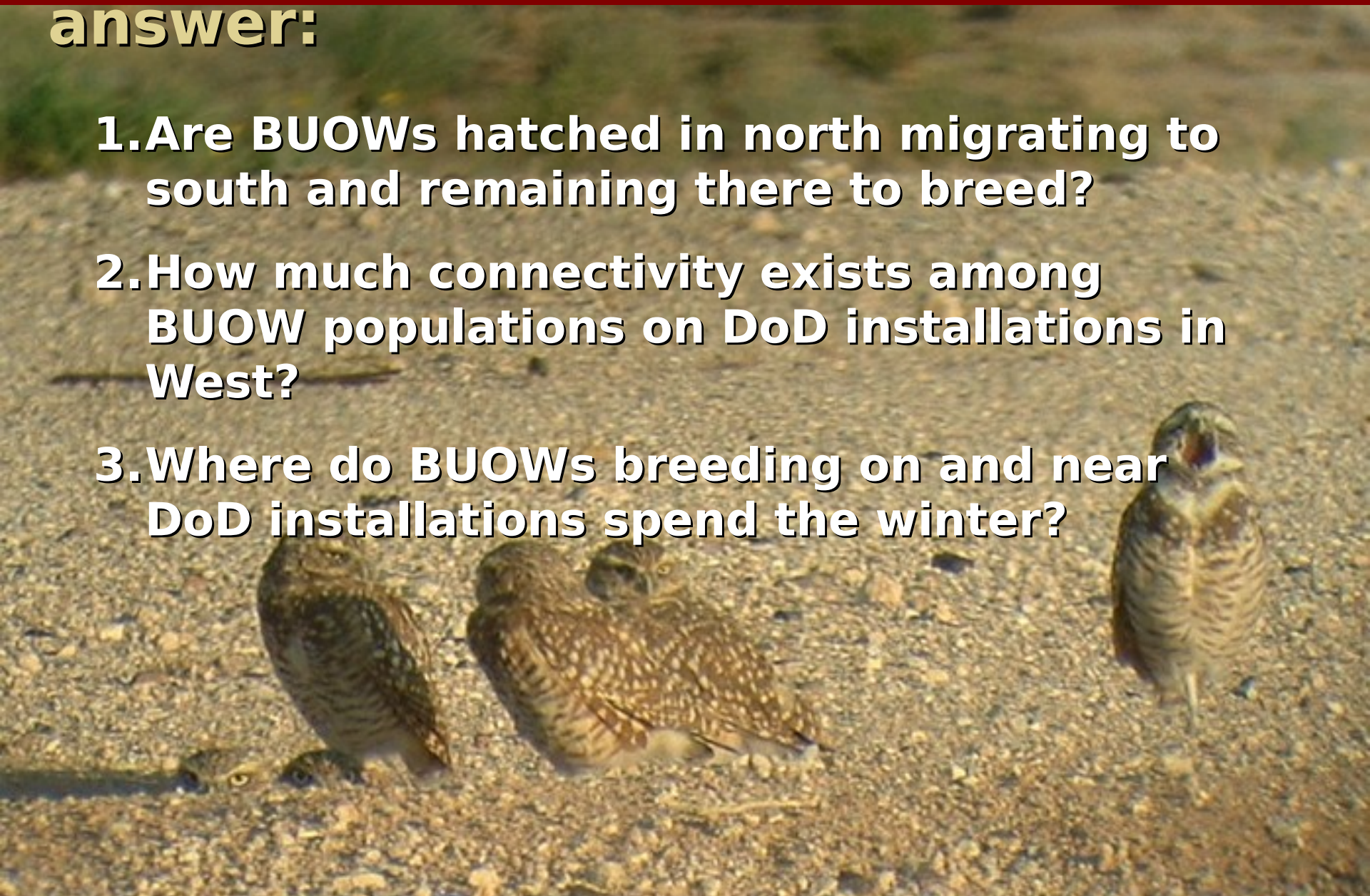
Are Burrowing Owls redistributing their populations, rather than declining?

If this hypothesis is correct:

- impacts validity of current or future BUOW listing petitions.
- impact effectiveness of conservation and management efforts.
- impacts the military mission because BUOWs are common on DoD installations in western U.S.
- resulting limited distribution will cause BUOW populations to be vulnerable to environmental stochasticity and disease.

Specific questions this project will answer:

1. Are BUOWs hatched in north migrating to south and remaining there to breed?
2. How much connectivity exists among BUOW populations on DoD installations in West?
3. Where do BUOWs breeding on and near DoD installations spend the winter?



1. **Are BUOWs hatched in north migrating to south and remaining there to breed?**
2. **How much connectivity exists among BUOW populations on DoD installations in West?**

Methods

- Collect blood samples
  - relatedness follows a predictable gradient in which populations closer to each other are more closely related than populations farther from each other.
  - can use DNA to establish patterns of relatedness within and among populations.

Prediction

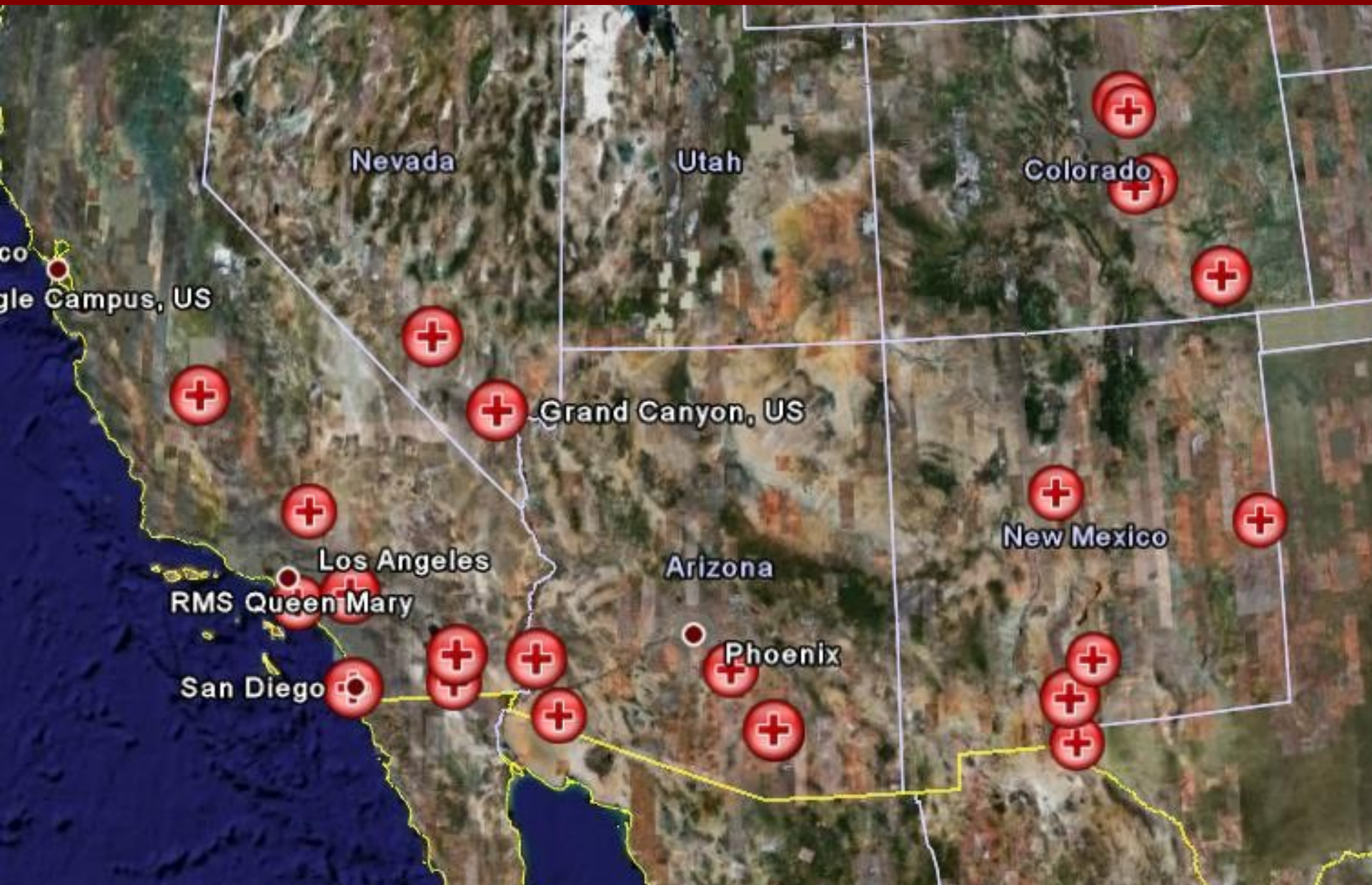
If burrowing owls hatched in northern latitudes are re-locating to southern latitudes, we would expect northern owls to be more closely related to owls in southern latitudes than predicted by the relatedness gradient.

3. Where do BUOWs breeding on and near DoD installations spend the winter?

Methods

- collect feather samples
  - each feather bears a stable isotope signature unique to the location where the feather was grown.
  - BUOWs molt some feathers during winter, so these feathers can be used to determine where each owl spent the winter.
- place a radio-transmitter on subset of BUOWs and track during migration

Participating Installations



Current Status

Activity (as of Oct 2006)	***n***
Samples collected	**979**
Participating sites	**29**
Personnel trained	**8**
Radio-marked owls	**28**

Participating Facilities

- Barry M. Goldwater Air Force Range
- Boardman Bombing Range
- Buckley AFB
- Cannon AFB
- Casa Grande National Monument
- China Lake Naval Weapons Station
- City of Tucson
- Davis-Monthan AFB
- Dixon Navy Radio Transmitter Facility
- Edwards AFB
- Fort Bliss Army Base
- Fort Carson Army Base
- Fort Irwin
- NAF El Centro
- NAS Lemoore
- NAS North Island
- Nellis AFB
- Nevada Test Site
- Pinon Canyon Maneuver Site
- Pueblo Chemical Depot
- Rocky Flats
- Rocky Mountain Arsenal NWR
- Salton Sea NWR
- Schriever AFB
- Seal Beach Naval Weapons Station
- White Sands Missile Range

Partners

Canadian Wildlife Service

Desert Southwest Cooperative Ecosystem Studies Unit

National Park Service

University of Alberta

University of Arizona

US Department of Energy

US Fish and Wildlife Service

USGS Arizona Cooperative Fish & Wildlife Research Unit